BATTERY CALCULATIONS
FAP-001 & -002-65

ITEM	DESCRIPTION	QTY	STANDBY CURRENT PER ITEM (AMPS)	TOTAL STANDBY CURRENT PER ITEM	ALARM CURRENT PER ITEM (AMPS)	TOTAL ALARM CURRENT PER ITEM
CP-35	FACP w/2ZN'S + AUD	1	0.1750	0.1750	0.5010	0.5010
PS-35	POWER SUPPLY	1	0.0000	0.0000	0.0000	0.0000
BC-35	BATTERY CHARGER	1	0.0450	0.0450	0.0300	0.0300
AA-30U	CLASS B BELL MODULE	–	0.0065	0.0000	0.0300	0.0000
SM-30	SWITCH MODULE	1	0.0000	0.0000	0.0450	0.0450
SR-35	8 RELAY MODULE	2	0.0000	0.0000	0.0210	0.0420
ZN-34US	SUPERVISORY MODULE	1	0.0100	0.0100	0.1100	0.1100
ZU-35	ZONE MODULE	4	0.0090	0.0360	0.1100	0.4400
ZU-35DS	ZONE MODULE/SD's	–	0.0090	0.0000	0.1100	0.0000
SMOKE	SMOKE DETECTOR	22	0.0001	0.0022	0.0010	0.0220
MOI	TRANSMITTER	1	0.1200	0.1200	0.1750	0.1750
MID	INPUT BOARD	1	0.0020	0.0020	0.0000	0.0000
PS-5A	POWER SUPPLY	1	0.0380	0.0380	0.0000	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT						1.4050
	TOTAL SYSTEM CURRENT		STANDBY	0.4282	ALARM	2.7700

MIN. BATTERY CAPACITY = {(TOT. STANDBY CURRENT X STANDBY TIME) +
(TOT. ALARM CURRENT X ALARM TIME)} X 1.25

MIN. BATTERY CAPACITY = {(0.4282 A X 24 HR) + (2.77A X 0.083 HR)} X 1.25

MIN. BATTERY CAPACITY = {10.2768 AHr + 0.2299 AHr} X 1.25 = 13.1334 AHr

NOTIFICATION APPLIANCE CIRCUIT
VOLTAGE DROP & POWER REQUIREMENTS

CKT AV1: 65,B65A,B65B DESCRIPTION	QTY	CURRENT PER ITEM (AMPS)	TOTAL CURRENT PER ITEM
WHEELOCK STROBE 15 cd	–	0.5010	0.0000
WHEELOCK HORN/STROBE 15cd	–	0.0000	0.0000
WHEELOCK STROBE 30 cd	–	0.0300	0.0000
WHEELOCK HORN/STROBE 30 cd	–	0.0450	0.0000
WHEELOCK STROBE 75 cd	7	0.1650	1.1550
WHEELOCK HORN/STROBE 75 cd	–	0.1100	0.0000
WHEELOCK STROBE 110 cd	–	0.1100	0.0000
WHEELOCK HORN/STROBE 110 cd	–	0.1750	0.0000
WHEELOCK HORN	–	0.0000	0.0000
AUTOCALL BELL	5	0.0500	0.2500
TOTAL NOTIFICATION APPLIANCES CURRENT			1.4050

VOLTAGE DROP (VD) CALCULATIONS

VD = {(I) (D) (21.6)}/CM

WHERE: I = CIRCUIT CURRENT
D = CONDUCTOR LENGTH (FT) ONE WAY
21.6 = CONSTANT
CM = WIRE CROSS-SECTIONAL AREA (CIRCULAR MILS)

VD = {(1.405 A) (140FT) (21.64)}/4110 = 1.034V

%VD = {1.034V / 24V} X 100 = 4.307%

REMAINING VOLTS = 22.966

WIRE SIZE	CIRCULAR MILS
12AWG	6530
14AWG	4110
16AWG	2580
18AWG	1620
20AWG	1020

FIRE ALARM SYSTEM FUNCTION CHART

SYSTEM EVENT	RESPONSE: ANNUNCIATE AT FACU	FIRE SIGNAL TO RECEIVER	TROUBLE SIGNAL TO LBNL RECEIVER	SUPERVISORY SIGNAL TO LBNL RECEIVER	OPERATE 65,B65A,B65B NOTIFICATION APPLIANCES
65 FIRE CALL BOX	●	●			●
65 HEAT DETECTOR	●	●			●
65 SMOKE DETECTOR	●	●			●
65 FIRE SPRINKLER WATERFLOW SWITCH	●	●			●
65 FIRE SPRINKLER VALVE SUPERVISORY SWITCHES	●			●	
B65A,B65B FIRE CALL BOX	●	●			●
B65A,B65B FIRE SPRINKLER WATERFLOW SWITCHES	●	●			●
B65A,B65B FIRE SPRINKLER VALVE SUPERVISORY SWITCHES	●			●	
AC POWER FAILURE	●		●		
SYSTEM FAULT	●		●		

AS BUILT
–
–
09/30/13

REVISION NUMBER	DRAWN BY	CHECKED BY	APPR'D BY	DATE	REMARKS
_	LDD	LDD	MCD	09/30/13	AS BUILT

PROFESSIONAL SEAL (IF REVISION, APPLIES ONLY TO REVISED WORK)

ISSUE (PROGRESS, ESTIMATE, BID, CONSTRUCTION, CONFORMED, REVISION, RECORD)

BLDG 65, B65A, B65B FIRE ALARM FUNCTION CHART & CALCULATIONS

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DRAWN BY	LDD	09/30/2013
CHECKED BY	LDD	09/30/2013
APPROVED BY	MCD	09/30/2013
SCALE	AS NOTED	

UNIVERSITY OF CALIFORNIA
LAWRENCE BERKELEY NATIONAL LABORATORY
FACILITIES DIVISION

DRAWING NO. 4B65E028_

SHEET 1 OF 1

PROJECT NO. 000000